COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

Investigation by the Department of Telecommunications and Energy on its own Motion into Distributed Generation	)	D.T.E. 02-38

Comments of AES NewEnergy, Inc.

AES NewEnergy, Inc. ("NewEnergy") appreciates the opportunity to comment on the Department of Telecommunications and Energy's ("Department") investigation into distributed generation ("DG"). As a licensed retail electric supplier serving thousand of commercial and industrial accounts throughout Massachusetts, NewEnergy has an interest in the development of the DG market. In this regard, we have offered comment specifically on question two as posed by the Department in its June 13, 2002 order.

NewEnergy is interested in fair distribution rate treatment for all customers regardless of whether they use DG. Distributed generation has long been viewed as a viable resource option for customers and a benefit to the system, however, these system benefits are nt unique/ DG closely resembles other load management. For ratemaking and revenue collection purposes today, most DG applications are virtually indistinguishable from other technologies and activities that impact a customer's load, such as load control devices, more energy-efficient equipment, process changes, or fuel switching. [1] Near-term DG does not threaten distribution company planning, forecasting or revenue collection. Whatever the aspirations of DG providers and the interest of many consumers, DG market penetration is likely to remain low relative to distribution company loads in the near term. This suggests that deployment of customer-side DG will not significantly

[1] DG can cause distinct *physical* impacts on the system because it involves generation technology. Such physical impacts are the subject of interconnection and operational criteria being developed in other parts of this proceeding.

increase uncertainties facing distribution companies in load planning, rate design, or revenue forecasting over the next five or more years.

As customers' interest in distributed generation grows, the Departments investigation is timely given the growing interest in distributed generation. More clearly defined rules and tariffs for all market participants will serve to benefit developments in this market.

The following key principle's can help guide the Department toward these:

1. Distribution rates should be *cost-based*, and should charge customers based on their *usage* of the distribution system.

2. Rates should differentiate for *quantity* of usage, *quality* of delivery (firmness), *location* of service, and *time* of delivery (reflecting system loading).

3. Clear price signals should empower customers to *choose* where and when they use distribution company distribution services, and the quantity and quality of service they are willing to pay for.

4. If customers change their behavior along any one of these dimensions, their bill should change accordingly.

5. Onsite DG is only one of many ways that customers can change their consumption profile.

6. Distribution companies should accord *comparable treatment* to distribution customers, whether their profile changes due to onsite DG or any other reason.

2. Appropriate method for rates

The Department should distinguish between the need for and methodology for distribution rates and standby rates. Some basic concepts for rates are as follows:

1. *Avoid nonbypassable fixed charges* in rates (such as 'stranded' costs, exit fees, customer charges or 'grid' charges): these distort price signals, undermine customer choice and deter cost-effective DG, as well all other types of energy or demand management.

2. *Differentiate rate charges* by customer location, time of use, firmness of supply, and level of usage.

3. *Alternatively, establish, a two-part rate:* one part to collect historical distribution investment based on system usage, time of use and firmness, and the other to be based on location-specific incremental costs of system expansion.

4. *Establish curtailable tariffs with location-specific riders* that reward reliable load reduction that defers distribution investment or provides other identifiable local benefits to the system.

5. *If* separate standby rates are necessary, *differentiate standby rates by time, location, firmness and volume,* to enhance flexibility for both customers and distribution companies. Separate standby rates may not be necessary if the rate designs proposed in 2 or 3 are adopted.

6. *Limit any 'stranded distribution cost' or 'exit fee' recovery* exclusively to assets which the distribution company shows were placed in service for, and in fact serve, a single customer, and which cannot be reused.

7. *Ensure comparable treatment for interconnection costs* as between customers with and without onsite DG.

8. *Base distribution wheeling rates on the distribution company's incremental cost* to provide service.

9. *Define and establish 'distribution-only' retail tariffs* that discount customer bills or provide credits for transactions that require little or no use of transmission assets.

10. *Develop PBR rewards* for distribution companies that meet or exceed established criteria for reliability, efficiency and cost reduction through DG, or that arrange for reliable, curtailable customer load to defer identifiable distribution investment.

Distribution rates

Distribution *rates* should charge customers based on their contribution to distribution *costs.* To the extent that this enables customers to choose how much, how firm, where, and when they use electricity delivered by the distribution system, these choices may affect other customers' costs. If that occurs, this Department is well equipped to balance the benefits of informed choice, against the need to maintain equity among customers. For our part, we believe that rates should not subsidize some customers at the expense of others, except to advance an explicit policy choice articulated by the Department or the Legislature.

As regulated monopolies, distribution companies are obligated to provide service to customers. In return, they are entitled to the opportunity to earn a fair return of, and on, prudent investments incurred to provide that service. If electricity restructuring changes the distribution companies' risk of recovering those investments, then their allowed rate of return or performance incentive should be adjusted to reflect that. At the same time, the Department should strongly encourage the use of DG to minimize customer costs. It can help do this by ensuring that distribution companies are not penalized when customers choose DG solutions, and are allowed the opportunity to recover revenue losses from customer adoption of DG – as from other changes in customer loads – where these cannot be mitigated.[2]

Distribution rate design should facilitate cost-effective DG deployment, from both the customer's and the distribution company's perspective. To do that, distribution company rates and policies should be designed to reflect distribution company costs, and when possible, to capture specific benefits for which DG suppliers should be compensated (e.g., distribution investment deferral, via curtailment). distribution companies should have no incentive to erect barriers to deployment or operation of customer-side DG. Equally important for customers and DG providers, distribution company rate designs and policies should be *transparent, predictable and stable*, to reduce uncertainty and perceived risk to DG investors.

Finally, distribution company rate design should provide price signals that reflect costs. Prices should signal where and when DG provides value, or increases costs, to the distribution company, in order to empower consumers to make sound economic choices supporting efficient resource use.

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[2] Revenue losses do not equate to 'stranded costs'. Indeed, the term 'stranded costs' is a misnomer in the context of current distribution rate design. A reduction in a customer's load *for any reason*, including DG, may reduce distribution company revenue collections from that customer. But the same revenue may still be collected from, and any benefits will flow to, the full customer base (including new customers who benefit from past distribution company investments). In the context of distribution ratemaking, "stranded cost" concerns really involve possible revenue reductions from reduced load *that are not compensated* by either load growth or rate increases. In other words, so-called "stranded costs" often refer simply to reduced distribution company revenues from a given customer – and these costs need not be stranded at all.

In the current market and regulatory environment, The Department may best implement these concepts with the following measures:

First, for rate purposes DG should be treated like any other factor that impacts a customer's load. Changes in distribution company revenues from a single customer should be rolled into the revenue requirements that determine the rates paid by all customers, just as any system benefits that DG provides should be shared by all customers, (except where location-specific curtailment riders are used, as explained later). Billing determinants and charges should not discriminate against load reductions from DG any more than load reductions from other technologies, efficiency measures, or other customer initiatives. distribution companies should not be compensated for revenues they 'expected' to capture from individual customers who reduce load, regardless of how that reduction is achieved. In other words, we are asking not for special rate treatment for DG, only for *comparable treatment.*

Second, for economic efficiency, rates should reflect the costs of distribution. They should provide price signals to customers that indicate the value of load changes to the distribution company, measured by the incremental cost of delivery services and the loading on the system as a function of time. In reality that cost varies by *location,* by *service quality* (firmness and reliability), by quantity, and by time (allocated based on system loading to reflect available capacity) before system constraints. Distribution charges should reflect a customer's contribution to each of these dimensions of cost.[3] Customers who use distribution services during peak and require firm service should pay for those characteristics of service, whether or not they employ DG. A customer relying on DG to meet load whose DG goes down during the peak period, should pay for its actual peak usage as would any other customer. Conversely, if the same DG goes down off-peak, the customer should pay lower charges that reflect the lower costs or lower system loading imposed on the distribution system at that time.

[3] The principle of linking charges to costs applies equally to services other than distribution service. Ideally, customers would be able to see price signals that reflect the time-varying costs of various local and system services, including distribution, transmission and energy. Customer consumption decisions could then respond to price signals that better represent the real cost of consumption, at least from generation to the point of load.

Third, for interconnection charges, DG customers with onsite generation should be treated comparably with other retail customers. These charges should consider the incremental net costs to the DG customer (considering the benefits provided to other distribution system customers.

Fourth, for historic investments, prudently made, the distribution company should have the opportunity to continue to recover from customers a fair return on and of its capital. As has long been the case, the effects of increases or decreases in individual customer loads (and corresponding utility revenues) should be absorbed by all customers, including new ones that benefit from past distribution company investments in any capacity freed up for their use.

Fifth, for new investments, fairness dictates that investments made to benefit a single customer should be recovered from that customer, whether or not the customer employs DG. If that investment affords value to the distribution company, then or later, the customer should be compensated. In fact, California distribution companies already follow this practice. Developers often provide their own radial and interconnection assets. They transfer these assets to the distribution company, and then, as the distribution company's revenues increase from load growth that uses the assets, the distribution company pays the developer for value the asset provides to the distribution company.

Rate design sets the regulated price signals that customers receive. Rates should be designed to signal to customers both when they impose costs on the distribution company and the level of available capacity, and when they create savings for it. The more distorted these price signals, the less efficient customer energy use decisions will be, including decisions regarding DG. The most efficient price signal would be one that assigns costs and measures customer contributions to those costs on a real-time basis, and reflects cost differences on different parts of the distribution system and for different types of service. Ideally, a time- and area-specific rate of this type might measure usage by kW in hourly or quarter-hourly increments. Easier to implement would be a rate form based on larger blocks of time measured by volumetric (kWh) usage. In any case, there are several ways to implement tariffs that encourage customers to respond efficiently to price signals.

- *Preferred Design: Area- and Time- Specific Rates*. Our preferred design would bill customers based on distribution charges that vary by time (system loading)[4], location, desired firmness of capacity, and usage. These options would allow all distribution system customers to select the type of service each desires and to influence their own cost of services. When the time dimension is finely differentiated, the need for separate standby, maintenance, or emergency tariffs is eliminated: customers will pay for the delivery service when it is used, where it is used, and according to its delivery assurance (firmness) and quantity, whether or not they have DG onsite.

- *Alternative Design: Two-Part Tariff*. Although we urge the Department to move as quickly as possible toward our preferred rate design, we recognize that it may choose to move more slowly in this direction. An intermediate step could be to adopt a two-part tariff. One of the two components would collect the *sunk historical or fixed costs of the distribution company's distribution system.* These costs would be collected from all customers based on their usage along the dimensions listed for our preferred design, other than location-specific cost differences – i.e., through rates reflecting time (system loading), firmness, and volume.

  The second of the two rate components would reflect the *local incremental costs* of the distribution system. This part of the tariff would signal the incremental benefit or costs of changes in customer loads, by time and by location. For example, if load reduction in a specific area would contribute to deferring a planned distribution investment, then this part of the tariff would signal the value of that investment deferral. For customers willing to commit firmly to curtailing load in response to a distribution company request, this second part of the rate would confer additional deferral value corresponding to the level of customer commitment. (And distribution companies able to defer more expensive distribution investment in this

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4 Time-differentiated rates can reflect the fact that incremental distribution system costs are incurred largely to meet peak requirements. They signal the higher costs associated with system usage during high loading hours, which drives the need for new investment. However, by spreading the costs into other time periods reflecting a system loading profile, these rates recover some costs from all users of the distribution system and signal the customers regarding the level of available capacity at various time periods before such new investment is required..

way could be rewarded through performance incentives. See PBR discussion below.)

Adoption of either of these rate forms – our preferred design or the two-part approach – could increase or decrease the total revenues collected from each customer class, and would likely defer incremental distribution investments. However, if implemented only for nonresidential customers (at least initially), any net revenue impacts would be limited to the classes of customers most likely to benefit from early DG solutions. Although an area- and time- specific tariff moves away from historical preferences for average-cost-based rates under traditional regulation, it is the most economically efficient rate design – and would do the most to advance competitive electricity markets.

If the Department and other stakeholders are not comfortable departing from average- cost-based rates, several other options should be considered, as described below.

- *Differentiated Standby Rates*. If finely differentiated time- and location-based rates are not implemented for distribution services generally, it will be important to introduce such differentiations in standby rates, to allow DG customers to choose the type and quality of service they take from the distribution company. This is discussed in more detail below.

- *Competitive Procurements.* Although not strictly a rate design solution, and not as efficient or cost-effective as the approaches just described, distribution companies should consider competitive procurement of load reduction or local generation that reduces distribution service costs, whenever that is feasible. Implementing this recommendation requires the development of distribution company planning guidelines that ensure fair consideration of alternatives to traditional "wires" solutions. Both distribution companies and solution providers will face higher transactions costs with this approach than with our preferred tariff approaches described above, so procurement procedures must be streamlined to minimize costs and delays for all participants.

?? *Negotiated rates*. As applied in the past, one-off price agreements works to discourage the development of the competitive and cost-driven DG markets that this proceeding is addressing. One can argue that pricing flexibility allows the distribution company to reduce the loss in revenues it fears when a customer considers supplying part or all of its load with DG. However, pricing flexibility has too often been used not as a shield, but as a weapon targeted exclusively at DG applications, and not at other customer technologies or consumption changes that impact distribution company revenues. The Department should not allow pricing flexibility to be used to stifle DG competition as an alternative to grid-supplied energy services.

Standby/Back-up rates

Rates. A separate standby rate is not necessary if *all* distribution customers are allowed to elect the quantity and quality (firmness) of service they wish to receive, and customers are billed based on time (reflecting system loading) and location of usage. However, until such a rate design is adopted, standby charges are one of the most important rates the Department can establish for DG applications.

If standby rates do need to be developed, then they, like other distribution rates, should be based on cost, and should be designed to vary according to time, location, quality (firmness), and volume. Differentiating DG standby service by these factors offers a unique opportunity to maximize the use of both the distribution network and DG applications (as well as other load management technologies). From the distribution company's perspective, offering a range of standby services as we propose should enhance its own flexibility in meeting service obligations for both DG and full requirements customers. From an end-user's perspective, differentiated standby options will enhance opportunities to pursue a wider range of DG technologies, applications, and configurations. In any case, standby rates should not be the same as Standard Offer or Default Rates offered to non-DG customers. Standby rates should differ from these in that they should reflect the uniqueness of the service and associated costs.

Setting these rates for all DG customers as capacity payments ($/kW-mo) at or near the levels set for full requirements customers is inappropriate, and reduces end-user incentives to install DG. Unnecessarily high standby rates reduce DG opportunities and customer choice. Customers that might otherwise be interested in DG will be forced either to walk away from DG opportunities, or to develop their own additional, often uneconomic, onsite backup.

Standby by service quality and volume. Initially, the distribution companies should offer at least two levels of quality or firmness: firm (guaranteed service until the line goes down) and non-firm (always available except during certain peak constraints or emergencies). Standby service could be further differentiated through various degrees of reliability for reserved distribution capacity. For instance, customers could be allowed to enter into agreements with distribution companies for distribution service based on different degrees or levels of firmness. Firm distribution capacity reservations should command a higher price (or premium) than non-firm reservations. Uninterruptible power for varying lengths of time after the local grid has gone down should command even higher premiums. This type of service differentiation facilitates customer choice because it allows the customer, rather than the distribution company, to select the level of distribution reliability it actually needs and for which it is willing to pay.

Some distribution companies may propose to bill customers with DG for their full connected load, without credit for the fact that these customers supply part of their load from their own DG. Standby rates should *not* be set at levels that reflect the maximum peak demand or the full installed DG capacity at a particular load location, since these effectively assume 100 % utilization of the distribution system during peak constraint times. Standby rates that are set at total installed DG capacity and at prices similar to non-DG customer capacity assume that standby service will be required for a *simultaneous failure* of *all onsite generators*, *during peak times*. This is a low probability event that would happen rarely, if ever. Setting rates based on this contingency forces DG

customers to pay for capacity they do not want and would not use – an approach that does not facilitate meaningful customer choice.

In short, standby service needs to reflect the *probability* and associated cost of providing emergency power during constrained times versus during non-constrained times. For example, if those costs were differentiated by hour and reflected costs during high loading, on-peak hours, then the standby customer would pay for usage. The customer, not the distribution company, then determines the probability of being on peak based on the reliability of the DG. Further, standby rate structure should permit customers to choose the level and quantity of service they need (e.g., where 50% of the load requires firm but the rest can be non-firm) – and the cost they are willing to pay.

Fixed Prices. Efficient price signals and, using fixed charges, prevent customers from choosing to reduce their bills by managing their loads. First, standby service charges are sensitive to time of use. And second, for customers whose generation is smaller than their total load, the charges apply to the full nameplate capacity of any onsite generation – preventing them from choosing the level of standby service they need or want. Stated bluntly, fixed price tariff sends to standby customers is "the distribution company doesn't care whether you put DG on your site or how you operate it, as long as you pay us what you otherwise would have for distribution."

Finally, There should be consistency in principles, and in the types of distribution service offerings, but not necessarily in the levels of these charges.

DG technology will fundamentally change the way that customers receive energy services. In the future, behind-the-meter DG will play a critical part in providing reliable and high quality energy services to customers who are free to choose it. As DG technologies advance and more customers choose them, the Department may choose to revisit some rate designs to ensure that long run impacts are acceptable and distribution company cost recovery risks remain manageable.

4. Other

Many of our recommendations are based on current expectations of a slow growth. If these assumptions underestimate the growth in DG and as the new competitive market in electricity unfolds, the Department may need to review regulations and rates. Several factors will determine the need and timing of any future Department review. These include:

- The rate of load growth,
- Changes in peak load growth, including the degree to which DG reduces the need for incremental distribution company investments to serve peak loads,
- The rate of DG adoption and the applications and locations of where it is deployed,
- The rate of depreciation of the distribution companies' existing asset base, and
- Overall system utilization.

If some unlikely combination of these factors were to occur (such as low overall load growth, high peak demand growth not offset by DG reductions, rapid adoption of DG in areas providing little benefit to the distribution company, and large undepreciated costs for which distribution companies seek recovery), then the Department might need to reassess the degree of upward rate pressure and risk associated with distribution company operations. There is nothing to suggest that this time is near, or that unexpected departures from distribution company service will render the distribution companies, the Department or the Legislature powerless to react.